

U.S. Patent Application Serial No. 10/089,104
Response dated January 22, 2004
Reply to OA of August 25, 2003

IN THE CLAIMS

Please amend claim 1 and add new claims 11-13 as follows:

Claim 1 (Currently Amended): A nitrile group-containing highly saturated copolymer rubber comprising (a) 0 to 20% by weight of 1,3-butadiene units, (b) ~~0 to 50%~~ 10 to 45% by weight of saturated 1,3-butadiene units, (c) 40 to 50% by weight of α,β -ethylenically unsaturated nitrile monomer units, and (d) 10 to 35% by weight and at least 8% by mol of other monomer units, wherein the sum of 1,3-butadiene units (a) and saturated 1,3-butadiene units (b) is in the range of 20 to 50% by weight.

Claim 2 (original): The nitrile group-containing highly saturated copolymer rubber according to claim 1, which comprises (a) 0 to 15% by weight of 1,3-butadiene units, (b) 10 to 45% by weight of saturated 1,3-butadiene units, (c) 40 to 48% by weight of α,β -ethylenically unsaturated nitrile monomer units, and (d) 11 to 33% by weight and 8 to 30% by mol of other monomer units, wherein the sum of 1,3-butadiene units (a) and saturated 1,3-butadiene units (b) is in the range of 23 to 47% by weight.

Claim 3 (original): The nitrile group-containing highly saturated copolymer rubber according to claim 2, which comprises (a) 0 to 10% by weight of 1,3-butadiene units, (b) 15 to 40% by weight of saturated 1,3-butadiene units, (c) 41 to 46% by weight of α,β -ethylenically unsaturated nitrile monomer units, and (d) 12 to 30% by weight and 9 to 30% by mol of other monomer units,

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wherein the sum of 1,3-butadiene units (a) and saturated 1,3-butadiene units (b) is in the range of 25 to 30% by weight.

Claim 4 (Previously Presented): The nitrile group-containing highly saturated copolymer rubber according to claims 1, wherein the sum of monomer units (c) and monomer units (d) is in the range of 50 to 80% by weight.

Claim 5 (Previously Presented): The nitrile group-containing highly saturated copolymer rubber according to claim 1, wherein the sum of monomer units (c) and monomer units (d) is in the range of 55 to 75% by weight.

Claim 6 (Previously Presented): The nitrile group-containing highly saturated copolymer rubber according to claim 1, which is a product prepared by hydrogenating a copolymer of 1,3-butadiene, an α,β -ethylenically unsaturated nitrile monomer, and a monomer copolymerizable with 1,3-butadiene and the α,β -ethylenically unsaturated nitrile monomer.

Claim 7 (Previously Presented): The nitrile group-containing highly saturated copolymer rubber according to claim 1, wherein α,β -ethylenically unsaturated nitrile monomer is selected from acrylonitrile, α -chloroacrylonitrile, α -bromoacrylonitrile, methacrylonitrile and ethacrylonitrile.

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Claim 8 (Previously Presented): The nitrile group-containing highly saturated copolymer rubber according to claim 1, which has a number average molecular weight of 10,000 to 2,000,000.

Claim 9 (Previously Presented): A crosslinkable rubber composition comprising 100 parts by weight of the nitrile group-containing highly saturated copolymer rubber as claimed in claim 1, and 0.1 part to 10 parts by weight of a sulfur-containing crosslinking agent or 0.5 part to 8 parts by weight of an organic peroxide crosslinking agent.

Claim 10 (Previously Presented): A crosslinked rubber product made by crosslinking the crosslinkable rubber composition as claimed in claim 9.

Claim 11 (New): The nitrile group-containing highly saturated copolymer rubber according to claim 1, wherein said other monomer units are units derived from at least one monomer selected from the group consisting of α -olefins other than 1-butene, conjugated diene monomers other than 1,3-butadiene, non-conjugated diene monomers, unsaturated carboxylic acid esters, aromatic vinyl monomers, fluorine-containing vinyl monomers, unsaturated monocarboxylic acids, and unsaturated polycarboxylic acids and anhydrides thereof.

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Claim 12 (New): The nitrile group-containing highly saturate copolymer rubber according to claim 1, wherein said other monomer units are units derived from at least one monomer selected from the group consisting of butyl acrylate, isoprene and styrene.

Claim 13 (New): The nitrile group-containing highly saturated copolymer rubber according to claim 1, wherein said other monomer units are units derived from at least one monomer selected from the group consisting of isoprene and styrene.